K. HIMROD.

KILN.

APPLICATION FILED AUG. 30, 1916.

1,339,705. Patented May 11, 1920.

Fig. 1

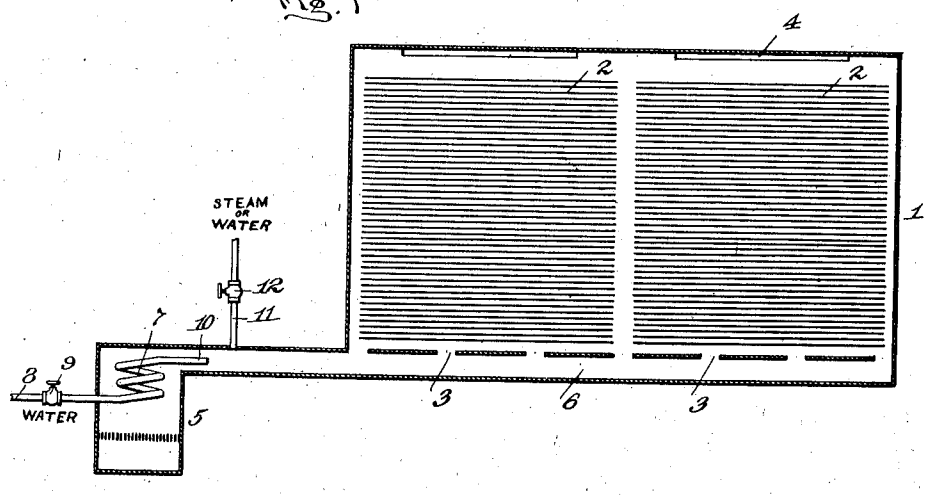


Fig. 2

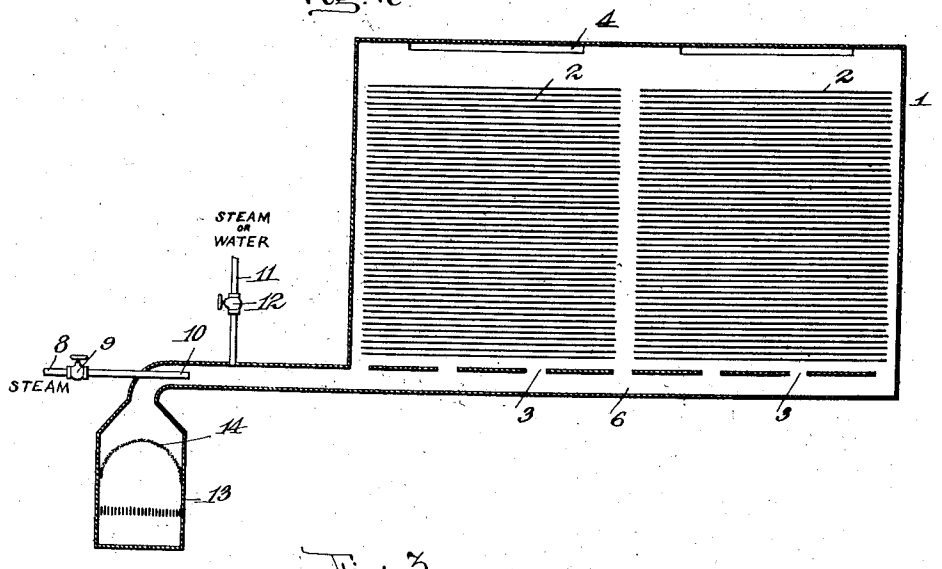
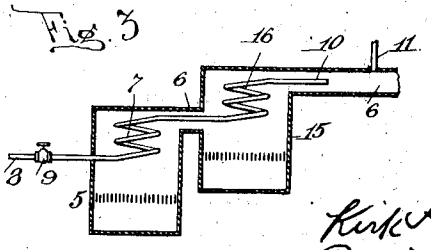


Fig. 3



Inventor

Kirk Himrod

By Dyer Taylor

His Attorneys.

UNITED STATES PATENT OFFICE.

KIRK HIMROD, OF IRONTON, MINNESOTA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO PAUL W. McKAY, TRUSTEE, OF WATERFORD, PENNSYLVANIA.

KILN.

1,339,705. Specification of Letters Patent. Patented May 11, 1920.

Application filed August 30, 1916. Serial No. 117,584.

To all whom it may concern:

Be it known that I, KIRK HIMROD, a citizen of the United States, residing at Ironton, county of Crow Wing, and State of Minnesota, have invented a new and useful Improvement in Kilns, of which the following is a specification.

My invention relates to kilns for drying and seasoning lumber or the like, and my object is to produce a kiln wherein the material to be seasoned is subjected to the direct action of heat from a furnace or other source of combustion.

A further object is to provide means for preventing contact of the flames with the material without loss of heat due to excessive distance between the source and the kiln.

A further object is to provide means for humidifying the heating agent and for regulating the amount of moisture in the heating agent.

A further object is to provide improved means for causing the heating agent to traverse the kiln.

A still further object is to produce a kiln which will be simple and cheap of construction and economical of use.

These and further objects will more fully appear in the following specification and accompanying drawings considered together or separately.

I have illustrated one embodiment of my invention in the accompanying drawings, in which like parts in all of the figures are designated by similar reference characters and in which:

Figure 1 is a diagrammatic sectional view of a kiln embodying my invention:

Fig. 2 is a similar view of a modification; and

Fig. 3 is a detail section of still another modification.

In the drawings 1 designates a building of the usual kiln construction in which the lumber 2 to be seasoned is piled with spaces between the boards for the passage of a heating agent as is customary. The kiln is provided with inlet openings 3 in its floor and outlet openings 4 near the roof.

I provide a furnace 5 located in proximity to the kiln and the furnace communicates with the kiln through the openings 3 by means of a flue 6. Located within the fire box of the furnace is a boiler 7, which in the embodiment of the invention illustrated in Fig. 1 is a flash boiler composed of a coil of pipe. The boiler is fed from a source of supply by means of a pipe 8 provided with a valve 9 and communicates with the flue 6 by means of a nozzle 10, by means of which a jet of steam is projected into the flue. The steam issuing from the jet will smother the flames in the flue and the pressure in the boiler will force the steam and products of combustion into the kiln, through the piles of lumber in contact with each individual board therein and out of the openings 4.

Between the jet 10 and the kiln 1, I provide a pipe 11 having a valve 12. This pipe enters the flue 6 beyond the jet and may admit water, which will, by the heat from the furnace, be converted into saturated steam during certain periods of the seasoning process, or it may admit steam when an additional supply is required for quenching the flame or for any other purpose.

The degree of heat admitted to the kiln may be regulated by increasing or diminishing the pressure of the steam issuing from the jet 10, or by the admission of water through the pipe 11 or both.

In the modification shown in Fig. 2 I show a furnace 13 provided with a spark-arrester 14 for preventing flames, sparks or burning embers from reaching the kiln. In this embodiment of the invention the steam for the jet 10 is transported from an independent source, such for example as the boiler of a saw mill.

In the embodiment of the invention shown in Fig. 3, I show an auxiliary furnace 15 for heating a coil 16. The auxiliary furnace and coil are placed in the flue between the main furnace and the jet 10 for the purpose of superheating the steam when desired.

The furnace is placed in close proximity to the kiln to avoid loss of heat by radiation, so that a very large percentage of the heat generated in the furnace will be utilized in the kiln.

My improved kiln requiring no elaborate system of piping, may be constructed very cheaply, and is so simple in its operation that it may be made a part of the equipment of the largest as well as the smallest saw mill. The lumber may be seasoned directly after sawing and the heavy transportation charges on green lumber avoided.

The furnace may be fired with the waste

products of the mill, such as sawdust or slabs or both, or the heat and steam for seasoning may be taken from the steam plant of the mill when such power is employed.

In accordance with the provisions of the Patent Statutes I have described the principle of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is merely illustrative, and that the invention may be carried out in other ways.

Having now described my invention what I claim and desire to secure by Letters Patent, is:

1. The combination with a kiln, of a burner, and means for directing the products of combustion from the burner into the kiln in the presence of superheated steam.

2. The combination with a kiln, of a burner, means for directing the products of combustion in the presence of steam generated in the burner, from the burner into the kiln, and means for superheating the steam.

3. The combination with a kiln, of a burner, means for directing the products of combustion from the burner into the kiln, in the presence of superheated steam and means for supplementing the steam supply.

4. The combination with a kiln, of a burner, a steam jet for directing the products of combustion from the burner into the kiln, and means for admitting water to the products of combustion.

5. The combination with a kiln having inlet openings, a flue communicating with the openings, of a burner communicating with the flue and in close proximity to the kiln, means for generating steam, means for superheating the steam, and means whereby the superheated steam is employed for directing the products of combustion from the burner to the kiln.

6. The combination with a kiln having inlet openings, a flue communicating with said openings, of a burner communicating with the flue and in close proximity to the kiln, means for generating steam, means for superheating the steam, and means for mixing the superheated steam with the products of combustion of the burner and directing the combined steam and products of combustion to the kiln.

7. The combination with a kiln having inlet openings, and a flue communicating with the openings, of a burner communicating with the flue and in close proximity to the kiln, and a steam jet for directing the products of combustion from the burner to the kiln, said steam preventing flame from reaching the kiln, and means for superheating the steam.

8. The combination with a kiln having inlet openings, a flue communicating with said openings, of a burner communicating with the flue and in close proximitv to the kiln, a conduit communicating with the flue between the burner and the kiln whereby a fluid may be delivered to the flue, means for generating steam, means for superheating the steam, and means for mixing the superheated steam and fluid delivered by the conduit with the products of combustion of the burner and directing the combined steam, fluid and products of combustion to the kiln.

This specification signed and witnessed this twenty fourth day of August, 1916.

KIRK HIMROD.

Witnesses:

EDWARD R. SYVERSON,

I. W. SMITH.